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A TASK ANALYSIS METHODOLOGY FOR THE DEVELOPMENT OF MINIMUM PHYSICAL EMPLOYMENT STANDARDS

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Conflicts of interest

The authors express no conflict of interest

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ABSTRACT

Objective: To develop a systematic task analysis process for determination of minimum acceptable job performance in arduous safety-related occupations. **Methods:** A task analysis using modifications on established methods was completed in UK firefighters. Subject-matter experts (all male) identified critical, physically arduous tasks generic to all UK firefighters and developed individual, role-specific task simulations. Video footage and blinded voting were used to determine minimum acceptable task performance. **Results:** Eight tasks were identified in combination with role-specific variations, task simulations suitable for use in a physical demands analysis and corresponding minimum acceptable performance. **Conclusions:** The bespoke steps highlighted here allow structured identification of task-specific minimum performance standards and simulations from which physical employment standards could be based. However, including a more divergent expert panel with respect to age, sex and race would strengthen the applicability of this framework in future practice.

Key Words: Physically demanding occupations, task analysis, physical demands analysis, physical fitness, physical employment standards

INTRODUCTION

Workers that perform public safety occupations undertake a variety of activities that can be both hazardous and physically demanding^{1,2}. These individuals are often required to respond within minutes, transitioning from rest and occasionally sleep, to high levels of physical exertion³. Consequently, a number of international studies have identified the importance of physical fitness in public safety roles⁴ and subsequently quantified the physical and/or metabolic demands of strenuous safety-related occupations, including: correctional officers⁵, police officers¹, ambulance service workers^{6,7}, military personnel⁸ and firefighters⁹⁻¹³. Understanding the physical stress and strain encountered by personnel in these physically demanding occupations is important so that the minimum acceptable fitness requirements can be established to ensure the health and safety of both the public and employees.

Two key stages often used in the process of determining the physical fitness requirements for a safety-related occupation are: (i) a task analysis and; (ii) a physical demands analysis. The aim of a task analysis, particularly when determining minimum occupational fitness requirements, is to clearly identify the critical and most physically arduous generic aspects of a job¹⁴⁻¹⁶ and to determine the minimum acceptable performance requirements. A physical demands analysis would then typically follow, and would involve the collection of physiological and/or physical performance data to quantify the physical demands of the tasks identified in the task analysis, performed to the minimum standard^{17,18}. Whilst many task analyses precede physical demands analyses, few have articulated the practical steps taken in a systematic manner in order that they could be replicated in other settings¹⁹. Additionally, a limited number of task analyses have been completed with the specific foresight to inform a future study aiming to quantify the physical demands of, and therefore the physical requirements for, tasks performed to a “minimum acceptable”

requirement^{11,13}. Ultimately, it is upon these requirements that minimum fitness standards should be based. Finally, the interim process of developing representative simulations of physically arduous tasks and objectively determining what constitutes minimum acceptable performance is also pivotal in ensuring the acceptability and validity of resultant standards, both to employees and employers.

In a number of developed countries, the implementation of justifiable physical employment standards for arduous jobs has become increasingly important. Changes to legislation around discrimination, in particular on the grounds of disability, age and sex has highlighted the legal requirement to develop fair and unbiased physical fitness standards^{1,18,20,21}. In addition, ensuring that employees maintain appropriate levels of physical competence, by administering routine physical fitness tests, is also now recognised as an important part of an employer's on-going 'duty of care' to help safeguard the health and safety of their employees^{1,22}. It is therefore important that both pre-employment and incumbent fitness standards be based on the physical demands of the tasks, which employees are expected to perform.

In the UK fire & rescue services, previous work to determine critical and arduous tasks has been undertaken for point-of-entry, or pre-employment, testing^{19,23}. However, the metabolic and cardiovascular demands of tasks performed by serving firefighters to a minimum acceptable requirement have not been quantified, which has hindered the development of evidence-based fitness standards for incumbents. Indeed, it is not possible to conduct a physical demands analysis without having first conducted a systematic task analysis, which provides sufficient information to subsequently determine minimum occupational fitness standards. Whilst frameworks of the key stages for developing occupational fitness standards have been published²¹, the practical steps required to fulfil

these frameworks are not often documented. A proposed model for such a systematic task analysis process appears to be lacking from the published literature.

To our knowledge, this will be the first paper to describe and document a practical model of a structured task analysis process used to, specifically, define and agree the minimum acceptable performance standards of essential generic occupational tasks. This process is essential for informing the development of minimum occupational fitness standards for a physically demanding occupation.

METHODS

A task analysis of the critical and most arduous generic firefighting tasks was undertaken in the UK fire & rescue service between October 2012 and March 2014. The research team collaborated with key stakeholders from the Chief Fire Officers Association (CFOA). We followed a framework of principles identified previously²¹, which included the following key stages:

1. Establish the critical tasks
2. Determine the “method of best practice” for undertaking the critical tasks
3. Agree on an acceptable minimum level of performance on the critical tasks

This study attempted to expand on these key stages by detailing the practical steps required within a task analysis process needed to satisfy industry stakeholders in the development of an occupational fitness standard for a physically demanding occupation.

Project Working Groups

Two distinct working groups of subject-matter experts were established to provide the research team with, technical and strategic review and guidance relating to the job (e.g. UK

firefighting). A Technical Panel (TP), consisting of operational personnel, was assembled to advise on the practical aspects of the job, whilst a Stakeholder Panel (SP) was established to provide strategic direction to the project team, to ensure that the process and outcomes were both logical and justifiable to the customer. Whilst the SP did not affect decisions made by the TP, they did evaluate and finally endorse all major decisions. The two panels were kept independent from one another throughout the project to ensure that political and/or strategic motivations did not influence alternative group outcomes, whilst the research team facilitated the transfer of information between the groups.

Technical panel (TP)

The TP consisted of 13 male operational personnel aged (mean \pm SD) 41 ± 7 years, from 10 fire and rescue services across the UK, with a range of ranks (e.g. firefighters, crew and station managers) and an average of 17 years of experience (range 10-27 years). Panel members were nominated from national technical working groups and were selected on their expertise and recent experience in operational incident management or in the delivery of training in one or more of the following areas; equipment manipulations (water relays using fire service hose / ladders / portable pumps); the use of breathing apparatus in structural fires; incidents involving chemical protection suits, wild-land firefighting, rope rescue, water or mud rescue, road traffic collisions and urban search & rescue activities. While a sex-diverse panel would have been preferable, unfortunately no female personnel volunteered to participate on the panel.

Stakeholder panel (SP)

The SP consisted of nine (8 male, 1 female) senior managers (i.e. Chief and Deputy-Chief Fire Officers) from UK fire & rescue services (age range 45-60 years) leading national working groups on firefighter fitness, health & safety, occupational health and technical response. The panel also embraced representation from the trade unions and local government association.

Task analysis process

A series of focus group meetings were conducted by the research team, which consisted of the TP examining relevant literature^{23,24} and fire service documents²⁵, reviewing best practice methods and discussing experiences within the group in open discussion before reaching a group consensus on any decisions required for the research process. This guaranteed that all decisions relating to the technical aspects of firefighting were made independently, by the subject-matter experts. These collective TP decisions were then taken to the SP for endorsement before moving on to each subsequent phase of the project (Figure 1).

[FIGURE 1]

Establish the critical tasks

Several meetings were convened for the TP to identify, discuss and agree upon the critical and most physically demanding aspects of UK fire and rescue activities. Initially, the TP were tasked with identifying any specific role-related differences within the rank structure of UK fire service personnel. Consideration was also given to whether any other factors (such as age and sex) would alter job role. In the UK fire & rescue service, any operational firefighter is expected to complete the same tasks irrespective of age and sex. Following this, activities

that were considered to be specialist roles (including road traffic collisions or water rescue activities) were dismissed from subsequent analysis on the basis that they would not be generic to all firefighters. Only tasks that were deemed to be both critical and the most physically demanding for all UK firefighters were included.

Determine the method of best practice

The TP identified the safest, most efficient manner of performing each of the tasks while adhering to established training guidelines, standard operating procedures²⁵ and safety regulations²⁶. In order to assist in determination of minimum acceptable performance of tasks, realistic simulations were developed by the TP to reflect the role of one individual in activities that incumbents would reasonably be expected to perform as part of their operational role. Typical distances and equipment used were agreed upon by panel members. The simulations were designed to fulfil the following criteria: being easily replicable (i.e. reproducible on a fire service training ground using standard fire service equipment); easily regulated (in terms of pace and instruction). With the specific foresight that a task analysis is often used to inform a subsequent physical demands analysis, it was also considered (if applicable) that tasks (while not measured in this study) should be of sufficient duration to elicit a representative steady-state of oxygen demand (for use in a future physical demands analysis). Finally, to attempt to establish the “urgency” around each task for when it would be performed, a hypothetical occupational scenario was constructed to provide specific context for that task.

Agree on an acceptable minimum level of performance

Once the task simulation protocols had been agreed upon, the appropriate simulations were filmed being performed by a trained male incumbent at three varying paces (video A – “slow” pace, video B – “moderate” pace, and video C – “fast” pace). The “moderate” pace (video B) corresponded to the average pace of two training instructors performing the task(s) at self-selected pace typical of an emergency incident. The slower and faster paces were chosen by adding (or subtracting) round increments of speed to the moderate pace while being both a) visually dissimilar from the moderate pace for easy differentiation and b) still within a safe pace for the nature of the simulated task(s).

The pace of the trained male incumbent performing each of the tasks was kept constant using a number of methods depending on the type of activity being performed. For activities involving walking or running over ground, the pace was controlled by passing marker cones (placed at 5-metre intervals) in time with audible signals emitted from an audio player. For tasks involving stair climbing and extending ladders, the pace was controlled using a metronome through headphones to indicate the appropriate step / pull rate, respectively. Five male incumbents (mean \pm SD, age: 40 ± 4 y, height: 1.77 ± 0.05 m, body mass: 83 ± 8 kg) were used for the filming of the task paces (the same individual was consistent for each task). These individuals were sought to represent the average UK firefighter (age: 42 ± 7 y, height 1.79 ± 0.07 m, body mass: 86 ± 13 kg, unpublished data) in an attempt to mitigate any visual bias to the perception of ease or difficulty of the task on film. While a sex-divergent group of incumbents who were used for the filming would have been preferable, no female incumbents volunteered to participate.

To determine the minimum acceptable level of performance for each critical task the Bookmark method of standards setting was adopted²⁷. Technical panel members were shown

the videos of each simulation being performed at the three paces (in sequence from slowest to fastest and were asked to indicate what they felt was the minimum acceptable requirement for each task. Each TP member voted anonymously on a scoring sheet for the pace that they felt corresponded to the minimum acceptable performance of the specific task (within the context of the scenario described). Panel members were given the option to choose the speed indicated by the videos shown, and also the speed between those videos, thus giving five choices in total. For some tasks, such as lifting a mass overhead, successful or unsuccessful completion was discrete (pass/fail) and therefore did not require judgement on any appropriate pace.

The actual pace of each displayed task was not divulged to the panel members so as not to influence their decision in any way. The individual votes from TP members were collated and presented back to the panel. The TP were then asked to reach a group consensus for each task. Normative analysis (mean and mode) of the votes was used to indicate the possible minimum acceptable pace, and was brought to discussion. Where responses clearly indicated a majority (mode) response, this pace was selected for discussion. Where a response was split between two choices, the middle point between the two choices was selected for discussion. Where a clear majority decision was not reached, further discussion took place around best practice of the activity and the context of the simulation until a consensus was reached for these tasks. It should be considered that if the votes are markedly polarised among the panel and, following discussion and clarification, it is clear that a consensus cannot be agreed, the task itself should be reconsidered, altered or excluded from further consideration.

RESULTS

The TP identified two distinct functions in UK firefighters and clear differences between operational firefighting roles and incident command roles. Those in a “firefighting” role (typically the rank of Firefighter, Crew Manager and Watch Manager) performed the most arduous of firefighting duties (casualty evacuation; equipment carrying; hose running; stair climbing; wild-land firefighting; lifting ladders; extending ladders; lowering ladders), whilst fire-ground “incident commanders” (typically the rank of Station Manager and above) were involved with reaching the operational incident (by walking and climbing stairs at wild-land fires and high-rise building fires respectively) and supervising firefighters at the operational scene. It was agreed that incident commanders would not be expected to undertake activities identified for those in a firefighting role. However, it was considered reasonable for this group of employees to wear the same personal protective equipment as a firefighter whilst reaching, and in attendance at, the operational incident.

Realistic simulations

Realistic single-person simulations were developed to reflect the activities that incumbents would be expected to perform as part of their role. The available choices of acceptable pace for each of these activities shown to the TP are displayed in table 1. Descriptions of the simulations are described below:

Hose run task (firefighter) – A simulated water relay task to establish a water supply from a fire hydrant to a fire appliance 100 m apart using a total of four lengths of hose completed over a flat 25 m course.

Casualty evacuation task (firefighter) – A simulated entry to, and rescue of an unconscious casualty from, an industrial building whilst wearing breathing apparatus equipment.

Equipment carry task (firefighter) – A simulated equipment-handling task carrying firefighting equipment over a 200 m distance. Performed by walking a flat 25 m course while carrying a 25 kg barbell.

Wild-land fire task (firefighter) – A simulated wild-land fire suppression task over 200 m using a fire beater. Performed by traversing a 50 m course of sloped rural ground 4 times, beating the ground on each ascent.

Wild-land fire task (incident commander) – The simulated management involvement during a wild-land fire. Performed by walking a 50 m course of sloped rural ground 4 times (without fire beating).

Stair climbing task (firefighter) – A simulated high-rise building fire. Performed by climbing 12 flights of stairs whilst wearing breathing apparatus equipment carrying 25 kg of firefighting equipment.

Stair climbing task (incident commander) - The simulated management involvement during a high-rise building fire. Performed by climbing 12 flights of stairs whilst wearing breathing apparatus equipment (without equipment).

Ladder lift task (firefighter) – A simulated ladder lift, lifting $\frac{1}{2}$ of the weight of the head of a 13.5 m fire service ladder. Performed by lifting a bar on a pivot arm from hip height to 1.82 m overhead (Approximately 29 kg at the mid-lifting point).

Ladder lower task (firefighter) – A simulated unhooking of a 13.5 m ladder in order to lower the equipment using a ladder simulator. Performed by a single overhead downward pull on a rope with both hands (Approximately 42 kg).

Ladder extension task (firefighter) – A simulated extension of a 10.5 m fire service ladder using a wall-mounted ladder simulator. Performed by continuously pulling down (hand-over-hand) on a rope until full extension (Approximately 28 kg).

[TABLE 1]

The mean, mode, range and consensus for the minimum acceptable paces for each simulation are shown in table 2. Both the TP and SP agreed and endorsed, respectively, that each of the single-person simulations developed for the determination of the minimum acceptable pace used up-to-date best practice methods, accurately reflected reasonable expectation of a firefighter (or incident commander), and the minimum acceptable requirement for each of the tasks. Simulations that had been developed previously in other related projects²³, that were deemed to still employ best practice were included within the battery of simulations. While a majority (mode) vote existed for task pace, the wild-land fire task was the only task to receive the full range of votes (1-5).

[TABLE 2]

The bespoke steps of the task analysis identified within this study are summarised in table 3.

*[TABLE 3]***DISCUSSION**

This study describes a task analysis designed to identify the minimum acceptable performance requirements of the critical and most physically demanding tasks within a safety-related occupation. We have expanded on the key stages identified previously²¹ by identifying bespoke steps within each stage of the task analysis process of: 1) establishing the

critical tasks (*identifying the most physically demanding and critical tasks; disregarding specialist activities; identifying role related differences where necessary*); 2) determining the “method of best practice” (*identifying standard operating procedures; developing realistic single-person simulations; identifying task-specific contextual scenarios*) and; 3) agreeing on an acceptable minimum level of performance (*developing a pacing strategy; identifying an objective scoring system; gaining consensus agreement*).

In the present study, this was achieved through consulting with subject-matter experts and the use of single-person simulations, video analysis and the “Bookmark method” of standard setting²⁷ to determine the minimum acceptable performance requirements of the most physically demanding and critical tasks undertaken by UK firefighters, specifically. This was performed so that the cardiorespiratory, strength and muscular endurance requirements of the job could be assessed through subsequent physical demands analyses and ultimately the determination of minimum occupational fitness requirements for UK firefighting roles¹².

In order to ensure the safety of workers in physically demanding safety-related jobs, employers must have an understanding of the arduous nature of the roles undertaken by employees. This is determined by conducting a job, or task analysis which often involves collecting a combination of objective, evidence-based and subjective information¹⁷. Previous task analysis studies have used a variety of established methods such as workplace observations³ and survey response data from a sample of the workforce²⁴ to understand the nature of specific occupations. For this study a workplace observation study would not have been suitable due to the unknown timing of emergency incidents. As such, some of the most critical and/or physically demanding aspects of the role may not be captured by this type of analysis. Additionally, whilst survey data can involve large numbers, which are often

representative of the workforce, we utilised open discussion and blinded voting with subject-matter experts, which aided navigation through previously identified potential sources of subjectivity within the task analysis process^{17,21}.

In this particular study, we identified a range of physically demanding tasks considered critical to incumbents in a firefighting role, which were casualty evacuation; equipment carrying; hose running; stair climbing; wild-land firefighting and the lifting, extending and lowering fire service ladders. These activities are similar to those reported previously in the UK fire and rescue service^{19,23} and are comparable to tasks performed by other firefighting populations^{3,10,11,13}. Tasks that involve, walking, running and climbing stairs combined with having to move heavy equipment and/or casualties whilst wearing restrictive personal protective equipment remain important components of the firefighter role, all of which interact to elicit a substantial physical demand upon incumbents¹². This consistency with other firefighting populations and the experience of the subject-matter experts used in this study lend confidence that the resultant tasks are representative of the occupation. The analysis of occupational roles within this study has gone further than many other task analysis studies by identifying specialist roles and determining the critical and most arduous generic tasks of all the recognised occupational roles within the UK fire and rescue services.

Although adding female subject-matter experts to the panel would have been more favourable, utilising a panel of experienced personnel in this study facilitated the understanding of the current practices adopted in the UK fire and rescue service. This would be effective for determining the method of best practice for any physically demanding occupation. Practical knowledge of manual handling guidelines, standard operating procedures and health and safety regulations assisted in the development of realistic single-

person simulations of occupational tasks that accurately reflected job requirements. This is vital for correctly assessing the physical demand of a task and, when developing subsequent simulations, maintaining external validity²¹. Examples from the current study included ensuring employee safety by not expecting any firefighter to run whilst wearing breathing apparatus equipment and adhering to a manual handling regulation maximum carrying weight of 25 kg²⁶. The TP were also instrumental in developing realistic scenarios for each of the tasks. As the successful completion of many firefighting activities are recognised as being time-sensitive, it was important that a detailed scenario for each task was identified in order to clarify the situational context/urgency of that task with a view to minimise potential subjectivity when identifying what was an acceptable or unacceptable speed of performance.

Extant research examining occupational physical demands has often required participants to perform tasks as quickly as possible^{11,13}. Other researchers have investigated demands based on a pace self-selected by participants using their experiential judgement of an emergency situation²⁸. Whilst it may be important to recruit current trained employees as participants in such studies, it may not be appropriate to assume that all incumbents have maintained role specific fitness levels to carry out these tasks at an acceptable pace. This is particularly relevant in the fire and rescue services where physically demanding emergency calls are so infrequent that the job demands themselves appear to be insufficient for maintaining role specific fitness levels²⁹. Additionally, in many instances, the aims of the above task analyses have been solely to understand the physical nature of a job by observing employees in their uncontrolled work environment. However, if a research project (such as a physical demands analysis) aims to quantify the physical fitness requirement associated with minimum acceptable job performance, very clear and distinct consideration should be given to controlling the pace at which incumbents perform job tasks to a minimum acceptable

standard⁹. If these considerations are met when completing an initial task analysis, any subsequent physical demands analyses can be conducted with consistent paces and performance standards. Controlling tasks to a constant predetermined pace also avoids a number of potentially confounding factors to eventual physical demand measurement such as participant physical fitness determining the physiological demand of the work performed²¹. For these reasons, the project team used video footage of each simulation being performed at set work rates allowing the subject-matter experts to review and clearly identify the minimum acceptable performance requirement for each activity in a fashion similar to the Bookmark method²⁷. This would be an important consideration when developing minimum physical fitness standards for any physically demanding occupation where task performance is time-sensitive.

Whilst every attempt was made to develop a consultation process that dealt with subjective components of this analysis in a structured way, it is clear that when running focus groups with experienced subject-matter experts, some differences of opinion on the nature of the occupation and which tasks are most arduous may still arise especially if it had involved female panel members. Theoretically, these could be founded on differences in the particular occupational environment or geographical location in which the panel member works; their number of years of experience or their interpretation of the particular scenario(s) presented, including sex and age-related considerations. For instance, the minimum acceptable pace for the wild-land fire task received a polarised vote which could indicate a need to re-consider the appropriateness or design of the task or removal from the analysis altogether. As such, one of the limitations of this study, which we would seek to address in any future studies, was that no female personnel volunteered to participate in the technical panel or the filming of

task simulations and that clarification should be sought on the inclusion/exclusion of any tasks that vary widely in employee practice.

Utilising a group of industry stakeholders to subsequently endorse the decisions made throughout the project may have increased the ecological validity of the outcomes from open discussion. However, analysis of reliability of the task- and pace- selection process were not conducted. As such, the research could be further improved with the inclusion of a test-retest of the voting process, and subject matter experts retrospectively endorsing trained incumbents at the selected paces to be “safe and efficient”. Finally, it should be acknowledged that other activities such as using heavy equipment at road traffic collisions or water rescue activities were also identified as physically arduous tasks for UK firefighters but were not included on the basis that they are sometimes specialist, as opposed to generic, tasks. However, these emergency incidents are not uncommon and, due to their importance, it would be favourable for firefighters to be physically capable of working at such incidents and may therefore warrant further investigation.

This study completed a rigorous task analysis of the critical and most arduous activities undertaken by UK fire service personnel, using a logical, systematic and structured format and engaging subject-matter expertise from within the organisation. This, in conjunction with a blinded voting format and constructed videos of firefighting activities, allowed for the effective determination of the minimum acceptable performance standards. Including a more divergent subject-matter expert panel with respect to age, sex and race, the structured steps identified within this task analysis methodology could be employed to establish minimum physical employment standards for other physically demanding public safety occupations.

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FIGURE LEGENDS

Figure 1. Task analysis consultation process using convened meetings with technical (subject-matter experts) and stakeholder panels. Boxes with rounded edges denote practical work completed by the research team, while squared edges denote meetings and correspondence led by the research team.

TABLE LEGENDS

Table 1. Speeds of each recorded video for each task and corresponding voting options.

Table 2. Technical panel choices, mean, mode, range and consensus scores with corresponding minimum acceptable work rates.

Table 3. Summary of the practical steps undertaken.

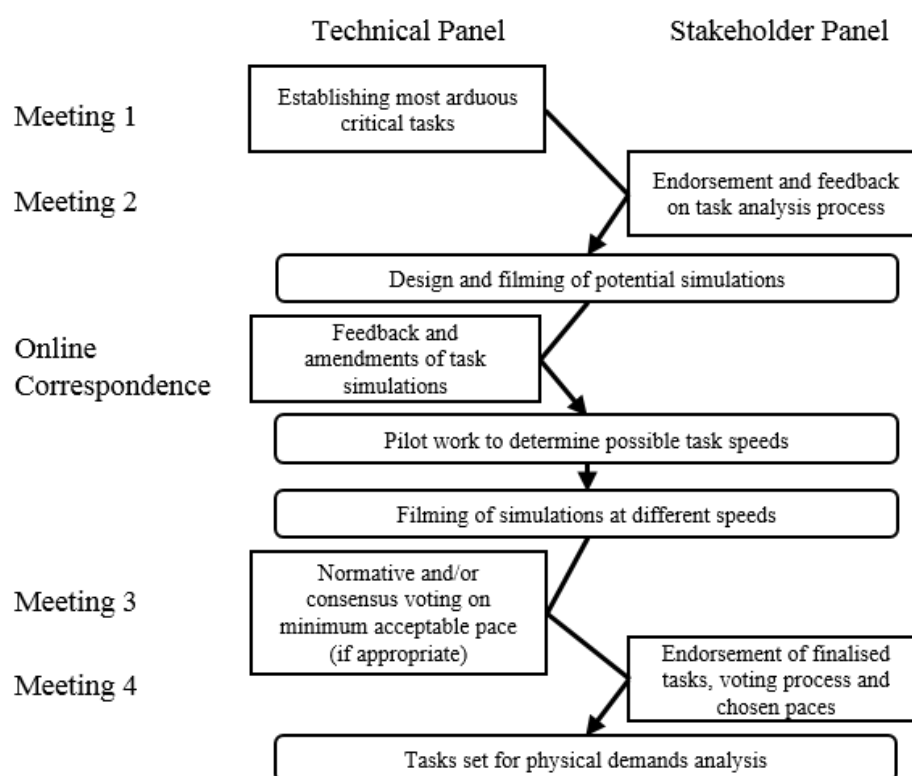


Figure 1. Task analysis consultation process using convened meetings with technical (subject-matter experts) and stakeholder panels. Boxes with rounded edges denote practical work completed by the research team, while squared edges denote meetings and correspondence led by the research team.

Table 1. Speeds of each recorded video, for each task and corresponding voting options.

Video	Video A		Video B		Video C
Voting options	1	2	3	4	5
Hose Run	6 km/h		8 km/h		10 km/h
Equipment Carry	4 km/h		6 km/h		8 km/h
Stair Climb	75 steps/min		95 steps/min		115 steps/min
Casualty Evac. (Hose)	4 km/h		8 km/h		10 km/h
Casualty Evac. (Cas)	2 km/h		3 km/h		4 km/h
Wild land fire	2 km/h		3 km/h		4 km/h
Ladder Extension ⁺	30 reps/min		70 reps/min		110 reps/min

⁺ *reps/min = repetitions (rope pulls) per minute*

Table 2. Technical panel choices, mean, mode, range and consensus scores with corresponding minimum acceptable work rates.

Task	Vote score (Mean \pm SD)	Vote score (Mode)	Vote range	Consensus score	Chosen pace
Hose Run	2.8 \pm 0.4	3	2-3	3	8 km/h
Equipment Carry	2.3 \pm 0.9	2	1-4	2.5	5.5 km/h
Stair Climb	3.1 \pm 0.7	3	2-4	3	95 steps/min
Casualty Evac. (Hose)	3.5 \pm 0.8	3,4	2-5	3	6 km/h
Casualty Evac. (Cas)	3.0 \pm 0.9	3	2-5	3	3 km/h
Wild land fire	3.9 \pm 1.2	4	1-5	4	3.5 km/h
Ladder Extension ⁺	3.3 \pm 1.0	3	2-5	3	70 reps/min

⁺ *reps/min = repetitions (rope pulls) per minute*

Table 3. Summary of the practical steps undertaken.

Phase	Step
1. Establishing the critical tasks	(a) identifying the most physically demanding and critical tasks (b) disregarding specialist activities (c) identifying role related differences where necessary
2. Determining the “method of best practice”	(a) identifying standard operating procedures (b) developing realistic single-person simulations (c) identifying task-specific contextual scenarios
3. Agreeing on an acceptable minimum level of performance	(a) developing a pacing strategy (b) identifying an objective scoring system (c) gaining consensus agreement